APPENDIX II

RELATIONSHIP BETWEEN LEAF TEMPERATURE AND NET RADIATION

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Although leaf temperatures are directly affected by the intensity of net radiation, they are not controlled entirely by radiation. This is evident in net radiation and leaf temperature measurements made at the Sandhills Agricultural Laboratory in well-irrigated corn on July 28, 1978, (Fig. 1). On this date, prior to solar noon, leaf temperatures increased with increasing net radiation. As net radiation decreased in the afternoon, leaf temperatures remained relatively high in response to the elevated air temperature. The dual dependence of leaf temperature on air temperature and net radiation illustrates the reason dynamic plant simulation models must be capable of responding to changes in both parameters.

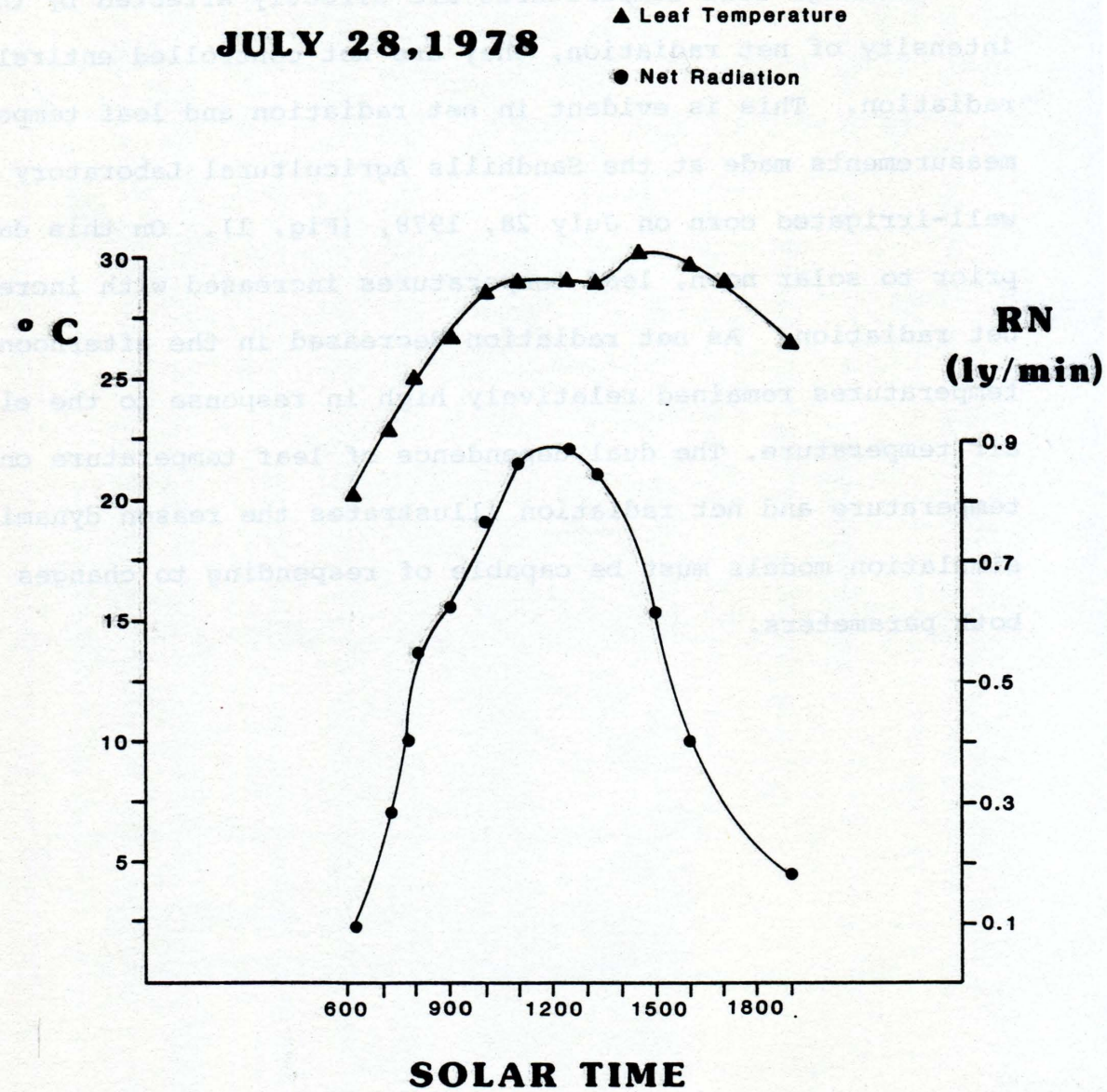

Fig. 1. Leaf thermocouple temperature of exposed leaves at the top of a well-irrigated corn canopy and net radiation above the same canopy on July 28, 1979.